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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/604,796	06/27/2000	Kyeong Jin Kim	8733.20134	4009

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EXAMINER

RUDE, TIMOTHY L

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 05/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/604,796

Applicant(s)

KIM ET AL.

Examiner

Timothy L Rude

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The Specification is amended and the objection to the drawings is withdrawn.

Claims

2. Claims 1 and 9 are amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA) in view of Yamada et al (Yamada) USPAT 6,344,883.

As to claims 1 and 20, APA discloses in Figure 1 and in the description of the related art, a multi-domain liquid crystal display device comprising: first and second

substrates facing each other and having a pixel region and a liquid crystal layer between the first and second substrates (inherent).

APA does not explicitly disclose a first dielectric frame on one side of the pixel region; a second dielectric frame on another side of the pixel region; and a dielectric protrusion between the first dielectric frame and the second dielectric frame.

Yamada discloses in Figures 10A-10D (col. 19, line 40 through col. 27, line 35) a dielectric frame, 36, (OMR83, col. 26, lines 45-62) in a region other than a region where said pixel (pixel region in 10C) electrode is formed on one or both of the substrates (col. 20, lines 8-12), said dielectric frame(s) distorting electric field applied to said liquid crystal layer (inherent to dielectric material, OMR83), and an alignment layer, 38a and 38b, on at least one substrate between said first and second substrates. Yamada also discloses in Figure 15 a centrally located dielectric convex portion, 69 (Applicant's dielectric protrusion), (col. 26, lines 45-62).

Note: The use of a dielectric material such as OMR83 for distorting the electric field was well known to those having ordinary skill in the art of liquid crystals at the time the claimed invention was made, however, in support of the fact that OMR83 is a dielectric that causes distortion of applied electric fields in LCD with liquid crystal material having negative dielectric anisotropy, Onishi et al (Onishi) USPAT 5,844,643 is cited. Onishi (Figures 8 and 9C, col. 20, lines 30-42 and col. 28, lines 8-19) discloses the use of OMR83 structures to create multi-domain effects wherein the LC layer thickness is not greatly reduced and where reduced layer thickness is not cited as a causal effect. The OMR83 structures of Onishi are considered to be functionally the

same as those of Applicant, and they are considered to confirm the structures of Yamada do distort the electric field.

Yamada is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a first dielectric frame on one side of the pixel region; a second dielectric frame on another side of the pixel region; and a dielectric protrusion between the first dielectric frame and the second dielectric frame to the LCD of APA to avoid a rough display in gray scales (col. 13, lines 36-46).

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with the dielectric frames and protrusions of Yamada.

As to claims 2-4, 7, and 26-29, APA does not explicitly disclose the multi-domain liquid crystal display device wherein the dielectric protrusion is expanded from the first substrate to the second substrate or from the second substrate to the first substrate.

Yamada discloses in Figure 15 a dielectric protrusion, 69, expanded from the first or second substrate (col. 26, lines 45-62).

Yamada does not explicitly disclose the dielectric protrusion, 69, expanded to the opposite substrate, however, it is well known in the art of liquid crystals to use dielectric convex portions as spacer elements which expand to the opposite substrate.

Yamada is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a dielectric protrusion expanded from the first substrate to the second substrate to control the liquid crystal orientation in a symmetrical pattern while providing support as a spacer.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of APA with an expanded dielectric protrusion of Yamada on either the first or second substrates.

As to claims 9-11, 14-19, 21-25, and 34, mere duplication of parts is an obvious design variation, not patentably distinct unless unexpected results are obtained.

As to claim 13, it is well known in the art of liquid crystals to divide a pixel into a plurality of independently driven regions in order to provide for a color display.

As to claims 5, 6, 8, 12, 30-33, and 35-37, these are all obvious variations on the invention disclosed by APA in view of Yamada and are therefore not considered patentably distinct. If the applicant does not agree, a restriction might be appropriate.

4. For convenience, Applicant may also review Lien USPAT 5,907,380; Colgan et al USPAT 6,256,080; Saito et al USPAT 6,304,308; and Horie et al USPAT 6,061,117.

Response to Arguments

5. Applicant's arguments filed on 01 August 2002 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

(1) None of the cited references disclose dielectric frames that distort the electric field.

(2) Yamada teaches that the difference in liquid crystal layer thickness causes a control of the molecular alignment.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Yamada discloses the use of OMR83 which is used in the art to form dielectric frames. Therefore APA in view of Yamada discloses the claimed structure and is believed to meet Applicant's enabling disclosure wherein OMR83 is suitable for the intended purpose of a dielectric material (Applicant's dielectric constant preferably below 3; broad examples: photoacrylate, BCB, or black resin) (Specification, page 13, lines 4-11). Please note that when the PTO shows a sound basis for believing that the products of the Applicant and the prior art are the same, the Applicant has the burden of showing that they are not (MPEP 2112.01). To overcome the rejection, Applicant must show evidence that OMR83 does not have a dielectric constant less than that of the liquid crystal material and/or a dielectric constant of about 3 or less.

(2) It is respectfully pointed out that Yamada may disclose causal effects beyond those disclosed by Applicant. APA in view of Yamada discloses the claimed structure

and that structure is considered to meet Applicant's enabling disclosure (Specification, page 13, lines 4-11) and would therefore necessarily meet Applicant's performance recitation of distorting the electric field.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.



Timothy L Rude
Examiner
Art Unit 2871

TLR
April 28, 2003

TOANTON
PRIMARY EXAMINER